



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/808,827	03/25/2004	Abaneshwar Prasad	100217	6730
29050	7590	03/02/2006		
STEVEN WESEMAN ASSOCIATE GENERAL COUNSEL, I.P. CABOT MICROELECTRONICS CORPORATION 870 NORTH COMMONS DRIVE AURORA, IL 60504			EXAMINER SCRUGGS, ROBERT J	
			ART UNIT	PAPER NUMBER
			3723	

DATE MAILED: 03/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/808,827

Applicant(s)

PRASAD, ABANESHWAR

Examiner

Robert Scruggs

Art Unit

3723

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) none is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
- Paper No(s)/Mail Date 3/25/04, 8/5/05.

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on March 25, 2004 and August 5, 2005 are noted. The submission is in compliance with the provisions of 37 CFR 1.97 and 1.98. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 7-10, 11-16, and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirokawa et al. (2002/0016139), in view of Wright et al. (6832950) Hirokawa et al. discloses a chemical mechanical polishing pad comprising, a polishing layer including various regions formed as hydrophobic and hydrophilic materials (Paragraph 22), wherein the hydrophobic region comprises a polymeric material formed as a polycarbonate having a surface energy of 34mN/m or less and the hydrophilic region comprises a polymeric material formed as a thermoplastic polymer (i.e. polyurethane) having a surface energy of more than 34mN/m (Paragraph 60), and abrasive particles including metal oxides formed from alumina (Paragraph 15), but lacks, polishing surface including an endpoint detection port comprising an aperture and optically transmissive material affixed to the polishing layer without the use of an

adhesive and having a light transmission of at least 10% at one or more wavelengths of from about 190m to about 3500 nm. However, Wright et al. discloses polishing surface including an endpoint detection port (Figure 1) (140) formed with a ring a hydrophobic material surrounding an aperture (Column 4, Lines 45-48) (Figure 2) (114) and optically transmissive material affixed to the polishing layer without the use of an adhesive and having a light transmission of at least 10% at one or more wavelengths of from about 190m to about 3500 nm (Column 2, Lines 42-51). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the polishing surface of Hirokawa et al. with an endpoint detection port in view of Wright et al. in order detect when the desired surface planarity or layer thickness has been reached.

4. Regarding the method claims 22 and 23, Hirokawa et al. taken in view of Wright et al. previously mentioned above inherently disclose a method of polishing a substrate comprising the following steps;

- a. providing a work piece to be polished,
- b. contacting the work piece with a chemical mechanical polishing system,
- c. abrading at least a portion of the surface of the work piece with the polishing system to polish the work piece, and
- d. detecting *in situ* a polishing endpoint.

5. Claims 2-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirokawa et al. in view of Wright et al. and Nagahara et al. (6168508). Hirokawa et al. in view of Wright et al. disclose the claimed invention previously mentioned above, but lacks, a plurality hydrophobic regions formed about the perimeter of the polishing layer

Art Unit: 3723

and a plurality hydrophilic regions in the form of alternating concentric shapes completely surrounding an endpoint detection port. However, Nagahara et al. teaches of a polishing pad having a plurality of alternating concentric regions (Figures 1a, 2b and 3b) including a hydrophobic region formed about the perimeter of the polishing layer and another hydrophilic region, and wherein a detection port is completely surrounded by a plurality of hydrophobic and hydrophilic regions. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the polishing surface of Hirokawa et al. with a polishing pad having a plurality of alternating concentric regions including a hydrophobic region formed about the perimeter of the polishing layer and a hydrophilic region, and wherein a detection port is completely surrounded by a plurality of hydrophobic and hydrophilic regions, in view of Wright et al. and Nagahara et al. in order to eliminate the effects of dishing during the polishing process.

6. Claims 17 ^{is} ~~are~~ rejected under 35 U.S.C. 103(a) as being unpatentable over Hirokawa et al. in view of Wright et al. and Kirchner et al. (6254456). Hirokawa et al. in view of Wright et al. disclose the claimed invention previously mentioned above, but lacks, a polishing surface comprising grooves. However, a polishing surface (Figure 3b) (150) comprising grooves (156). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the polishing surface of Hirokawa et al. with polishing surface comprising grooves, in view of Wright et al. and Kirchner et al. in order to provide polishing conditions where a substrate surface would be uniformly polished at the center and peripheral regions of the substrates surface.

7. Claims 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirokawa et al. in view of Wright et al. and Lehman et al. (2003/0190864). Hirokawa et al. in view of Wright et al. disclose the claimed invention previously mentioned above, but lacks, a subpad layer that is substantially coextensive with the polishing layer, wherein the subpad layer comprises an optical endpoint detection port that is substantially aligned the optical endpoint detection port of the polishing layer. However, Lehman et al. discloses a subpad layer (Figure 1h) (222) substantially coextensive with a polishing layer (220), wherein the subpad layer comprises an optical endpoint detection port (216) that is substantially aligned the optical endpoint detection port of the polishing layer (214). It would have been obvious to one of ordinary skill in the art at the time the invention was made to Hirokawa et al. with a subpad layer that is substantially coextensive with the polishing layer, wherein the subpad layer comprises an optical endpoint detection port that is substantially aligned the optical endpoint detection port of the polishing layer, in view of Wright et al. and Lehman et al. in order to provide a polishing pad having two surfaces where one surface conforms under conditioning of a polishing pad such that the conditioning across the window may be substantially uniform.

Double Patenting

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-

Art Unit: 3723

type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

9. Claims 1-23 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 26-35 and 38 of U.S. Patent No. 6884156. Although the conflicting claims are not identical, they are not patentably distinct from each other because the patent and the present application are both directed to a polishing pad having two materially different surfaces formed as hydrophobic and

hydrophilic regions, and said polishing pad also including an *in situ* endpoint detection system.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Wiswesser (6994607) and Roberts (6984163) both disclose polishing pads having windows used as a *in situ* endpoint detection system for determining when a substrate has completely undergone a uniform polishing process.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Scruggs whose telephone number is 571-272-8682. The examiner can normally be reached on Monday-Friday, 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Hail can be reached on 571-272-4485. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


DAVID B. THOMAS
PRIMARY EXAMINER

RS